TRANSPORTATION ACROSS THE AMERICAN LEGION BRIDGE

The 50th Anniversary and Beyond

Current and Future Traffic

July 25, 2012

Ronald F. Kirby, Director of Transportation Planning
National Capital Region Transportation Planning Board (TPB)
Metropolitan Washington Council of Governments (MWCOG)

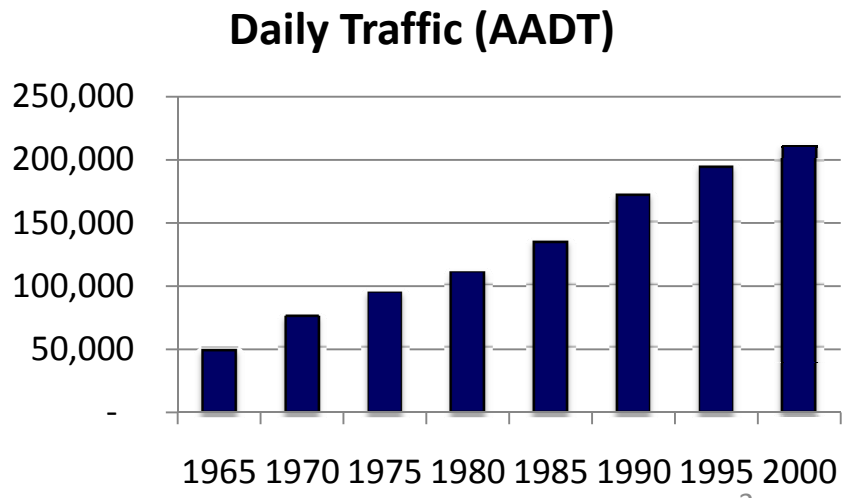
Metropolitan Washington Council of Governments

Structure of Presentation

1. History of Bridge
2. Current Traffic Conditions
3. Photographic Analysis: Skycomp
4. Congestion and Reliability: INRIX Data
5. Where are people coming from and going?
6. Forecasts & Land Use
7. Transit & Vanpool
8. CLRP Aspirations Scenario

American Legion Memorial Bridge: History

- Opened December 31, 1962. The cost of the bridge and its approaches was $2.8 million.
  - Entire Capital Beltway opened August, 1964.
  - Three lanes from I-95/Springfield interchange to the east and throughout Maryland including bridge; two lanes wide on Virginia side between bridge and Springfield.
- Traffic across the Bridge
  - 1965: 47,990 vehicles/day
  - 1980: 110,450 vehicles/day
  - 1992: widened to 10 lanes (4 through in each direction).
  - 2000: 211,000 vehicles/day

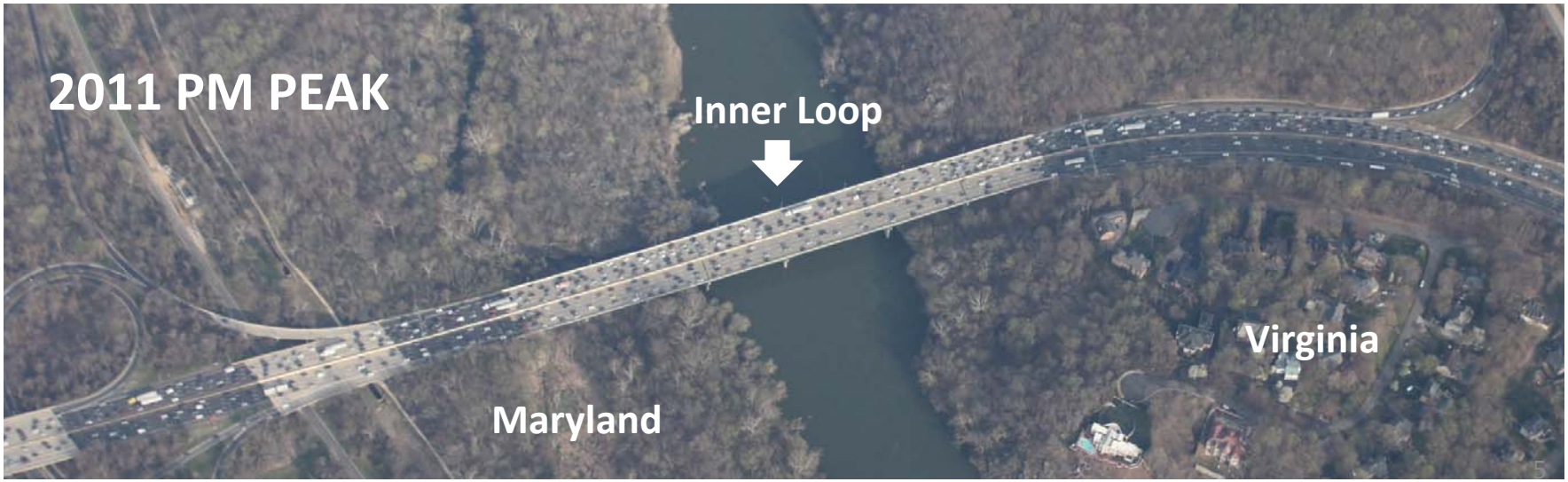


Current Travel Conditions

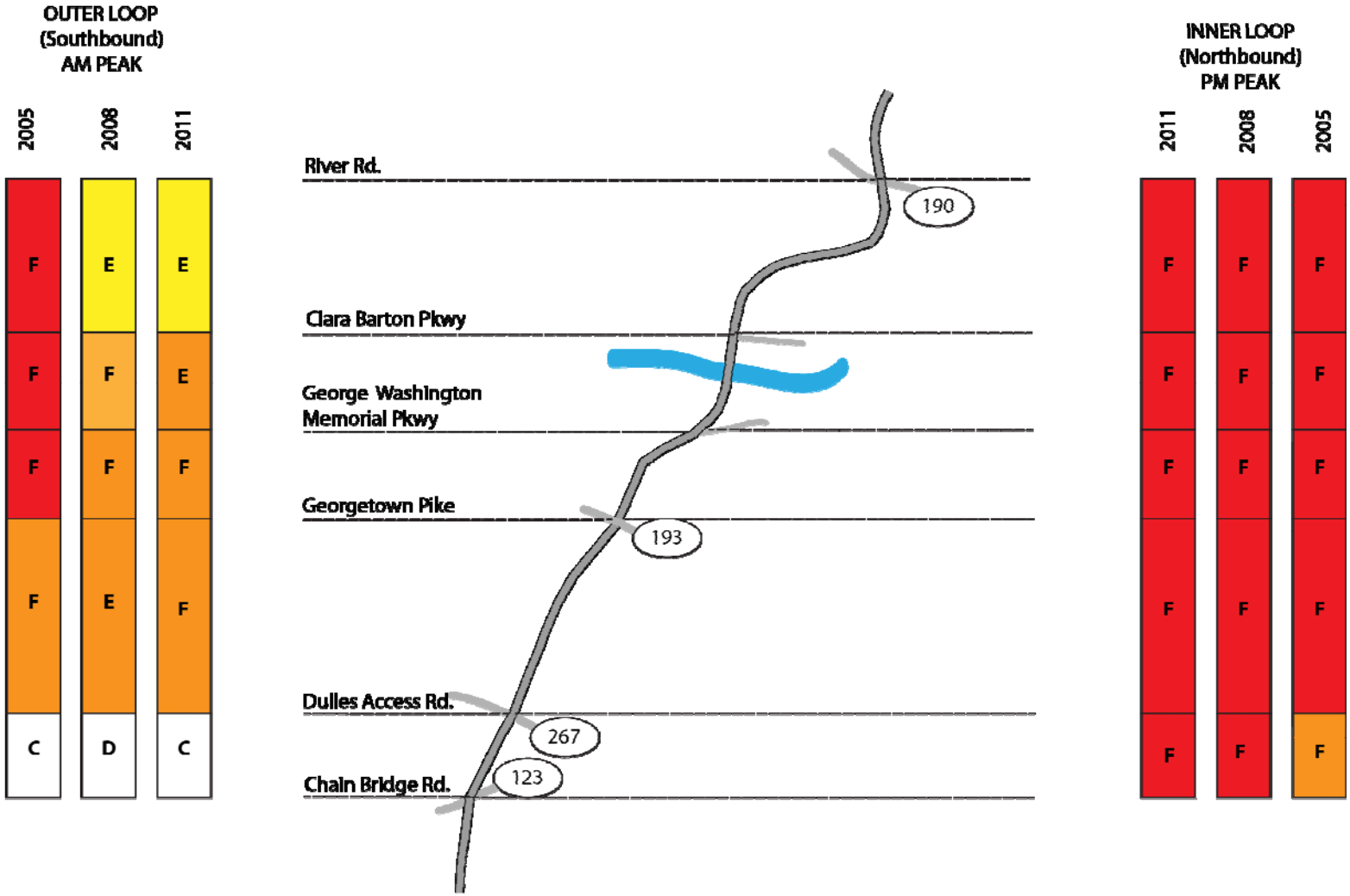
- Traffic Counts (2010)
  - Traffic counts for 2010 have 232,000 vehicles crossing the bridge daily.
  - Used by many commuters, but also inter-regional traffic. As high as 30% of the vehicles crossing the bridge are registered outside of the region.
- Among top five bottlenecks for truck traffic in Virginia's I-95 corridor, with over 14,000 trucks daily (6.5% of vehicles).
  - 131,000 hours of peak-period truck-hours delay (2006).
  - Annually, estimated 190 million tons of freight (2009), carrying an estimated $810 billion worth of goods (3rd highest tons/value of 29 bottlenecks on I-95 Corridor, Mid-Atlantic).

Photographic Analysis: Skycomp

- Since 1993 the region has been monitoring AM and PM peak period congestion using an aerial survey on a 3-year cycle.



Current Travel Conditions: AM and PM Traffic Quality



Skycomp: Observations and Trends

Outer Loop (AM)

- From 1999, morning traffic to Virginia experienced severe congestion in the vicinity of the bridge, with average speeds in the low 20s (mph).
  - In August 2005 the exit to the Dulles Toll Road was widened. Congestion was reduced and speeds close to the speed limit were achieved.
  - Congestion has started to increase since the 2005 fix; however, it has not reached the level experienced before Spring 2005.
- The 2011 survey identified the two AM "hot spots" as:
  - Merge point of the Beltway and I-270 spur near the the River Road exit.
  - South of the bridge near the exit ramps for GWP and VA 193.

❖ Average speeds of 35 to 45 mph at these two congested locations.

Inner Loop (PM)

- Inner loop PM congestion has existed since the first survey. The severity and the extent (queue length, number of hours) have grown steadily over time.
  - In 2011 the head of the congestion queue started at the I-270 spur and extended south past the bridge back to the VA 267 merge ramp.

❖ Average speed ranges between 15 and 25 mph in the vicinity of the bridge.

Where are people coming from and going?

2003 Camera Survey of Morning Commuters

In 2003, the consulting firm VHB conducted a camera survey of license plates during morning peak traffic on the American Legion Bridge for VDOT.

- Purpose: to understand origin and destination patterns for Virginia and Maryland residents using the bridge.
- Overall, the study concluded that origins and destinations for Legion Bridge commuters were widely distributed.

Virginia Drivers		*Exit in Maryland*		
	Origin	Clara Barton / River Rd	I-270	East on Beltway
Dulles	23%	1%	5%	16%
I-66	20%	1%	5%	14%
Rte 15	6%	0.3%	1%	4%
Rte 28/7100	33%	2%	8%	23%
I-95/I-495	34%	2%	10%	21%
All VA	**100%**	**7%**	**27%**	**63%**

Maryland Drivers		*Exit in Virginia*				
	Origin	I-66	Dulles	Rte 7	Other West of Beltway	East of Beltway
Beltway	42%	5%	9%	1%	12%	14%
I-270	41%	4%	8%	1%	10%	19%
All MD	**100%**	**11%**	**23%**	**3%**	**24%**	**35%**

** Percentages do not total due to some double-counting (where drivers could reasonably take multiple routes) and due to some unmonitored access points.*

Where are people coming from and going?

2007/2008 Household Travel Surveys

AM Peak Period Trips **(5:00 to 9:59 AM)**

- 19,400 Trips (Montgomery to Fairfax)
  - *Purpose*
    - 75% to Work, 25% Other Purposes
  - *Travel Mode*
    - 88% SOV, 9% Carpool, 1% Transit, 2% Other

- 13,800 Trips (Fairfax to Montgomery)
  - *Purpose*
    - 75% to Work, 25% Other Purposes
  - *Travel Mode*
    - 78% SOV, 16% Carpool, 6% Transit

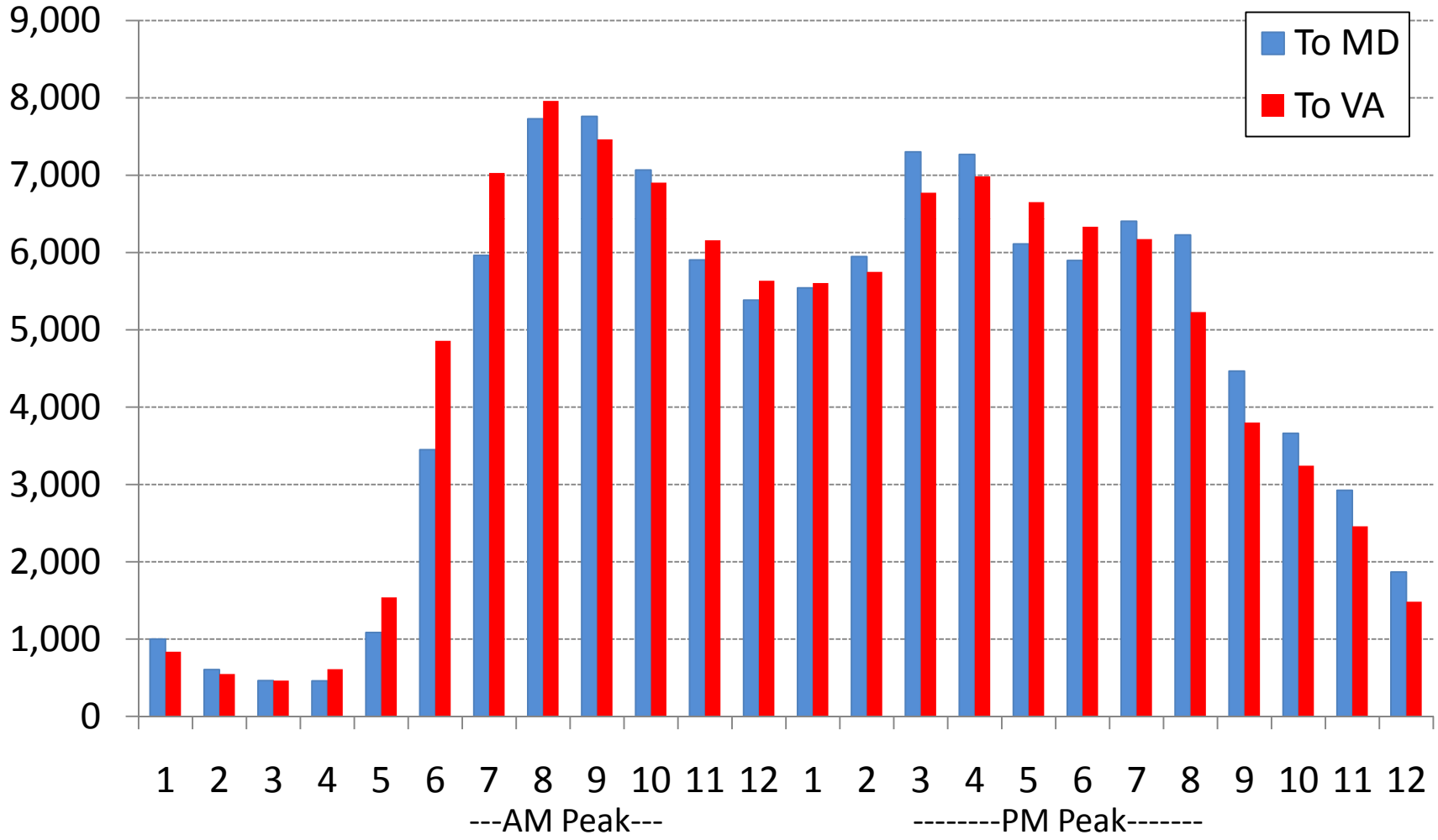
Daily Home to Work Commuting Trips

- 15,900 Trips (Montgomery to Fairfax)
  - *Travel Mode*
    - 92% SOV, 5% Carpool, 2% Transit, 1% Other

- 10,100 Trips (Fairfax to Montgomery)
  - *Travel Mode*
    - 91% SOV, 9% Transit

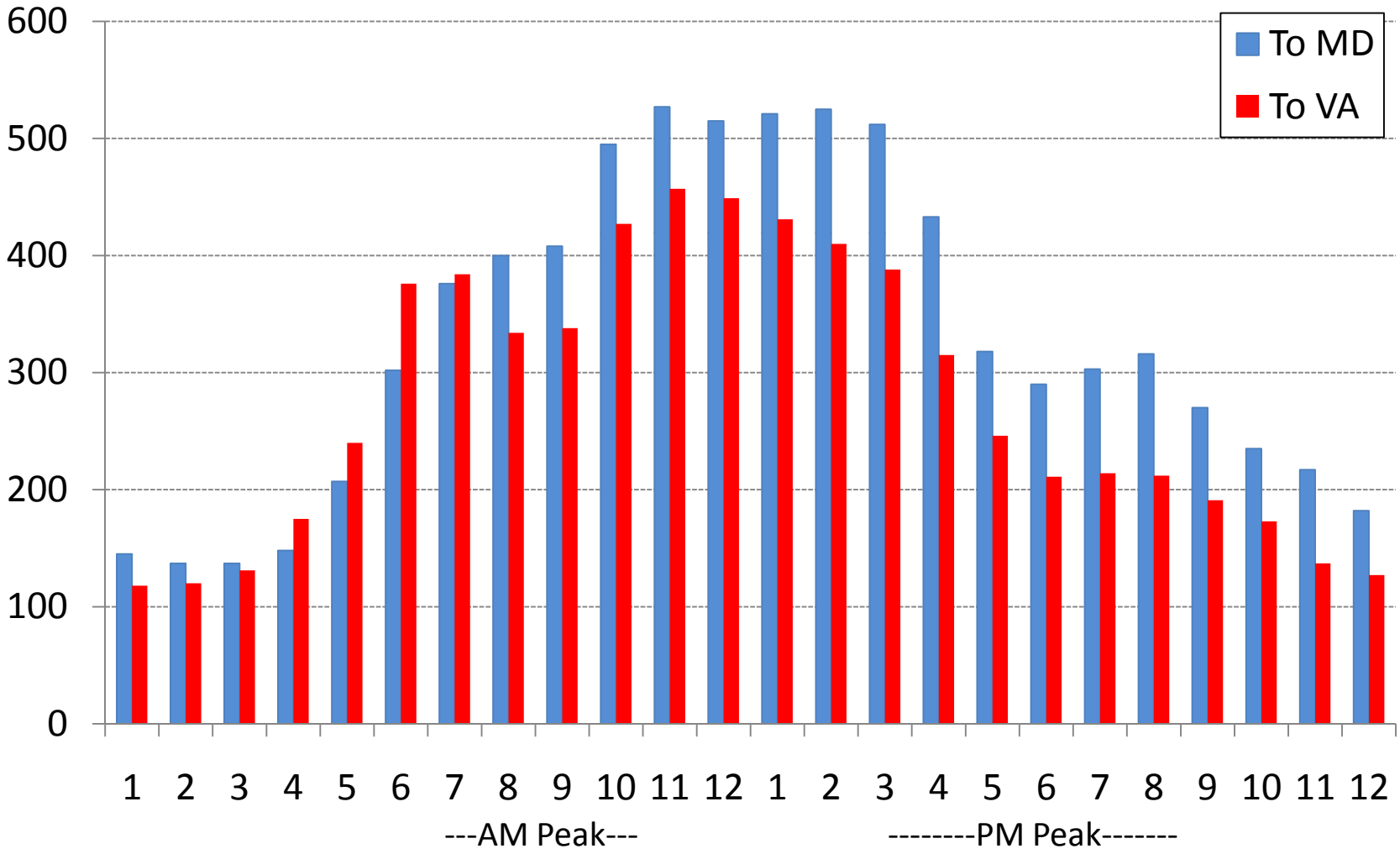
And when are they coming and going?

American Legion Bridge: Hourly Distribution of Total Traffic in 2011



And when are they coming and going?

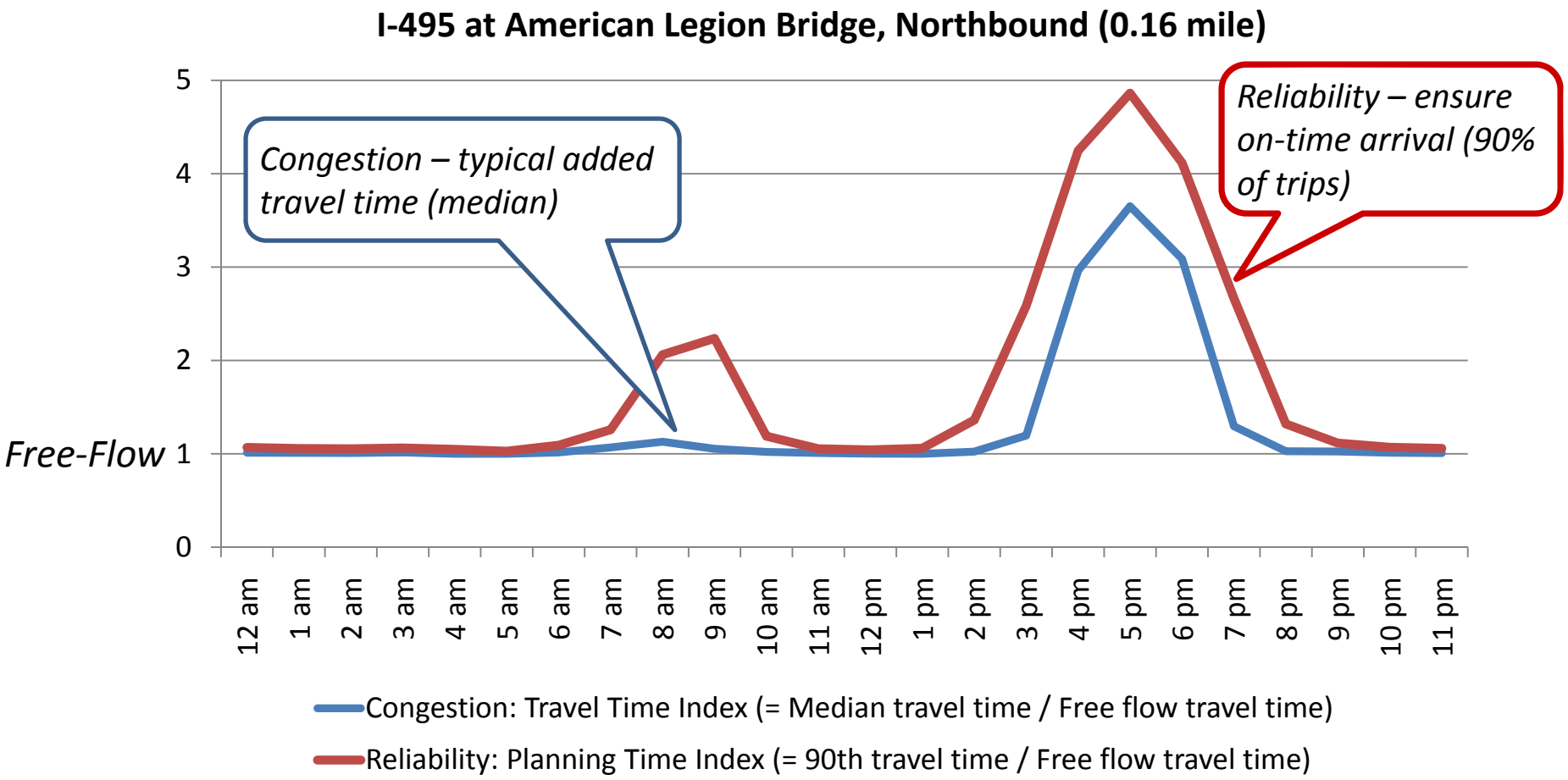
American Legion Bridge: Hourly Distribution of Truck Traffic in 2011



Congestion and Reliability, Northbound

INRIX Data

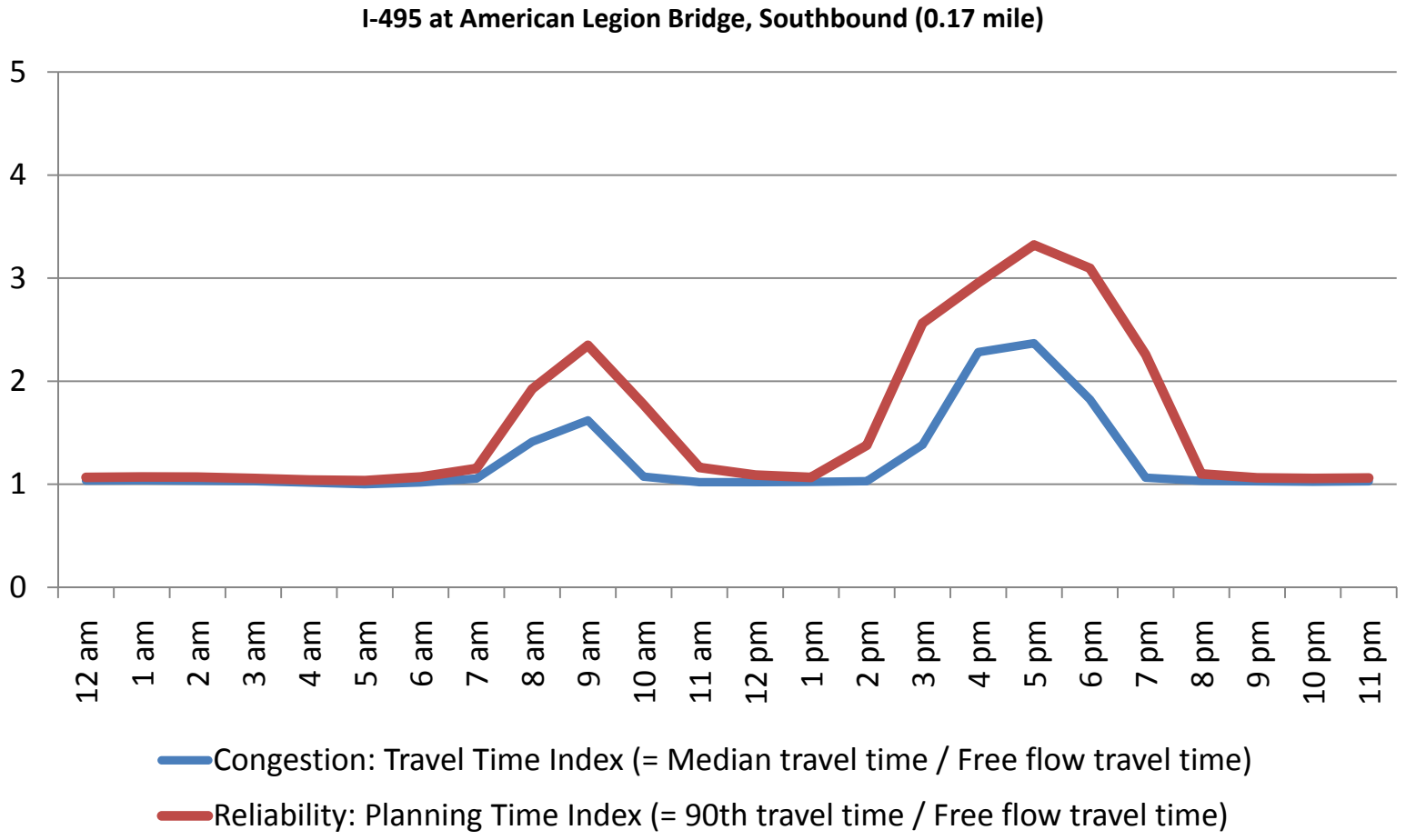
2011 Average of Tues, Weds and Thus; Federal holidays excluded



Congestion and Reliability, Southbound

INRIX Data

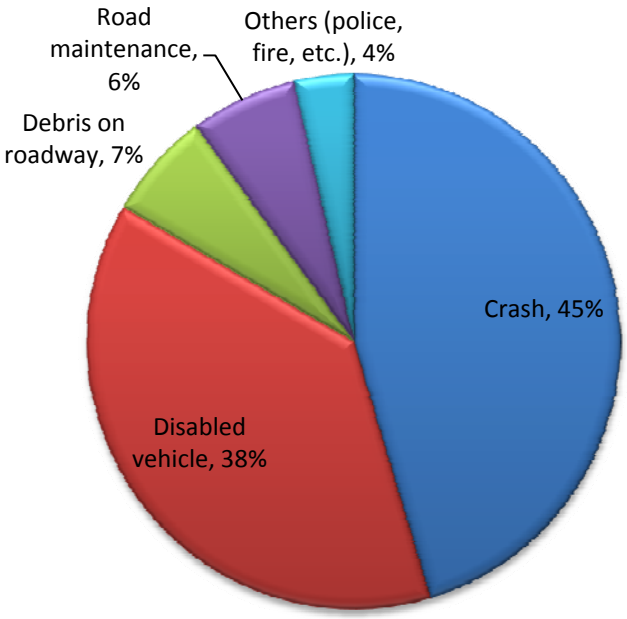
2011 Average of Tues, Weds and Thus; Federal holidays excluded



Incidents on the Bridge

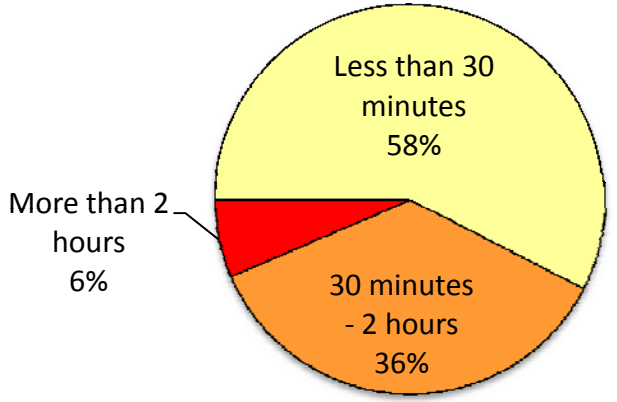
RITIS Data, 2011

139 incidents occurred on or in the vicinity of the bridge in 2011, including 63 crashes, 28 of which involved injuries.



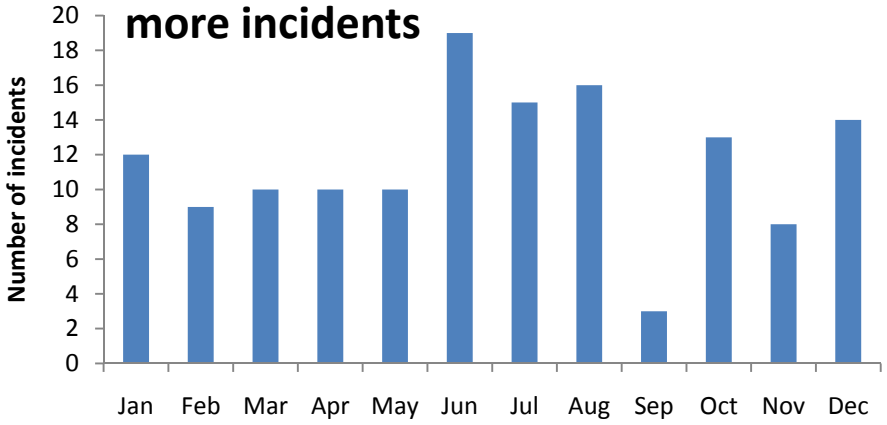
Incident types

… about 40% of the incidents lasted longer than 30 minutes



Incident duration

… and Summer months tend to have more incidents



Incidents by month of the year

Forecasts and Land Use

- The TPB recently updated its travel forecast model, which forecasts traffic volumes based on recent and forecast land use data and the current and planned transportation networks.
  - Between 2007 and 2020, the number of households in the region is predicted to increase by about 18% (+428,000) and the number of jobs is predicted to increase by about 21% (+770,000).
  - VMT is predicted to grow 13% from 2007 to 2020, and transit person trips are expected to grow 23% over the same 13-year period.
  - For Montgomery County and Fairfax County, both are predicted to have a household growth rate of about 12-13% (vs. 18% regionally) and a jobs growth rate of 16% for Montgomery Co. and 20% for Fairfax Co. (vs. 21% for the region).
- From 2007 to 2020, traffic volume is predicted to increase by 7% across the bridge; from 2007 to 2040 by 19% .
  - Increase in traffic is limited by capacity, with “rush hours” lengthening.
  - Speeds in the peak hour/direction are predicted to be 10 mph or less.

Transit and Vanpool Across the Bridge

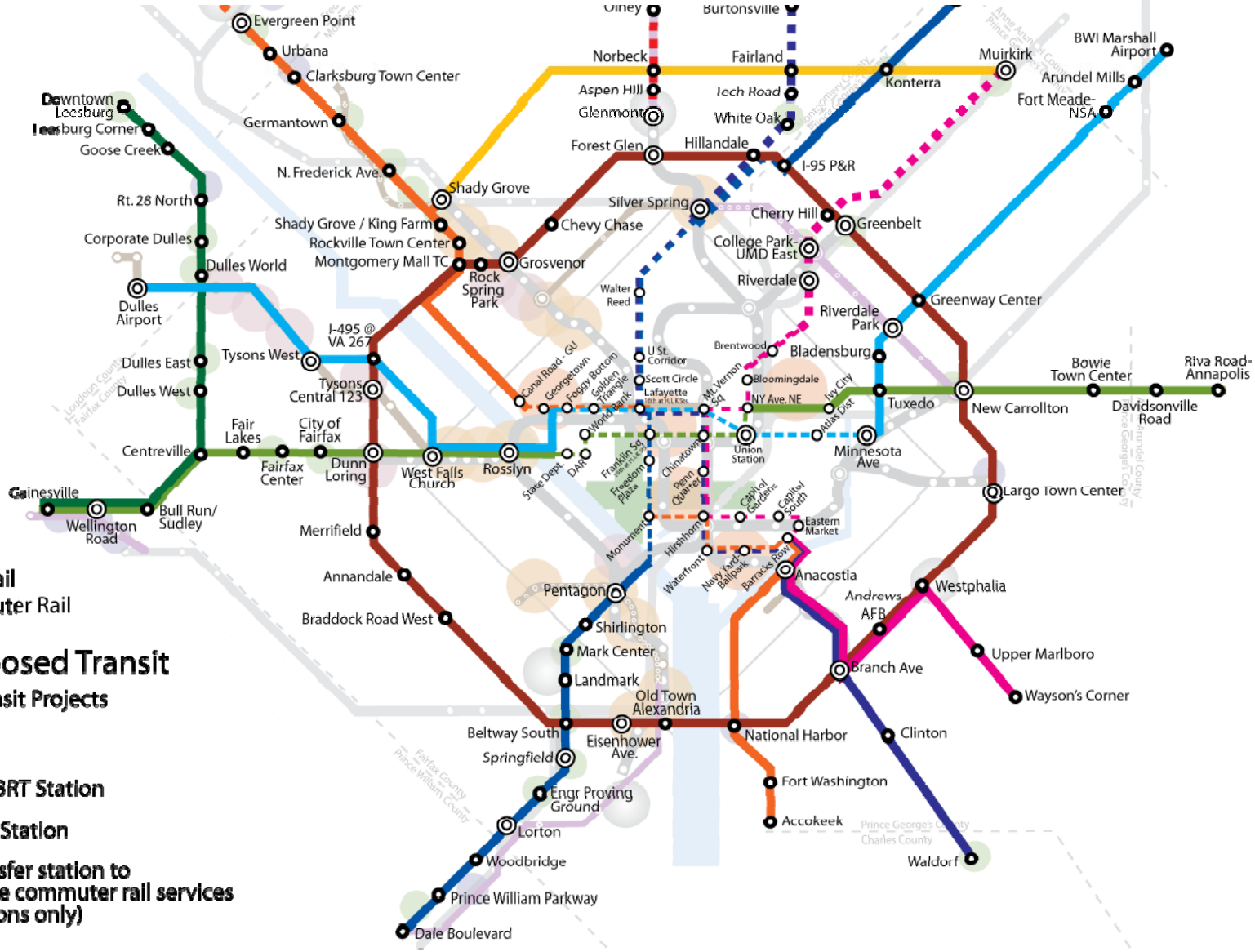
- Metrobus 14 (*1998-2003*)
  - Bus service connecting Gaithersburg/Montgomery Mall and Bethesda/NIH in Maryland with Tysons-Westpark Transit Station.
  - Discontinued due to low ridership (400 rider trips per day, or about 6 persons per bus trip.)
  - Lacked the right-of-way to bypass traffic; use of highway shoulders ineffective.
  - Did not fully connect high-density, walkable centers. Typically required auto use and/or bus transfers.
- Vanpools
  - Current data indicate 16 vanpools would likely make use of the Legion Bridge on a daily basis.
  - Capacity for 110 to 240 travelers (220-480 round trip).

CLRP Aspirations Scenario with Streamlined VPL Network

- Developed under the TPB Scenario Study Task Force based on the region's financially constrained long range plan (CLRP).
  - Focus land use by concentrating projected growth in activity centers and around existing/planned transit stations.
  - Address congestion through variable priced lanes (VPL) network.
  - Provide transportation alternatives through enhanced Bus Rapid Transit (BRT) network.
- In aggregate, toll revenues cover highway and transit costs, both capital and operating, for streamlined VPL network and BRT service.
- Improves travel conditions in relation to a 2030 baseline, with reduced delay and vehicle miles traveled (VMT)per capita.
- Assumes 4 general-purpose lanes and 2 variably-priced lanes across AL Bridge and along I-495 and I-270.

Regional Bus Rapid Transit Network

- Provide transportation alternatives through enhanced Bus Rapid Transit (BRT) and circulator service with 382 new buses



TRANSPORTATION ACROSS THE AMERICAN LEGION BRIDGE

Questions?

Washington Metropolitan Area Transit Authority

Metrobus Service on the American Legion Bridge

Fairfax-Montgomery Counties Joint Meeting
July 25, 2012

Background

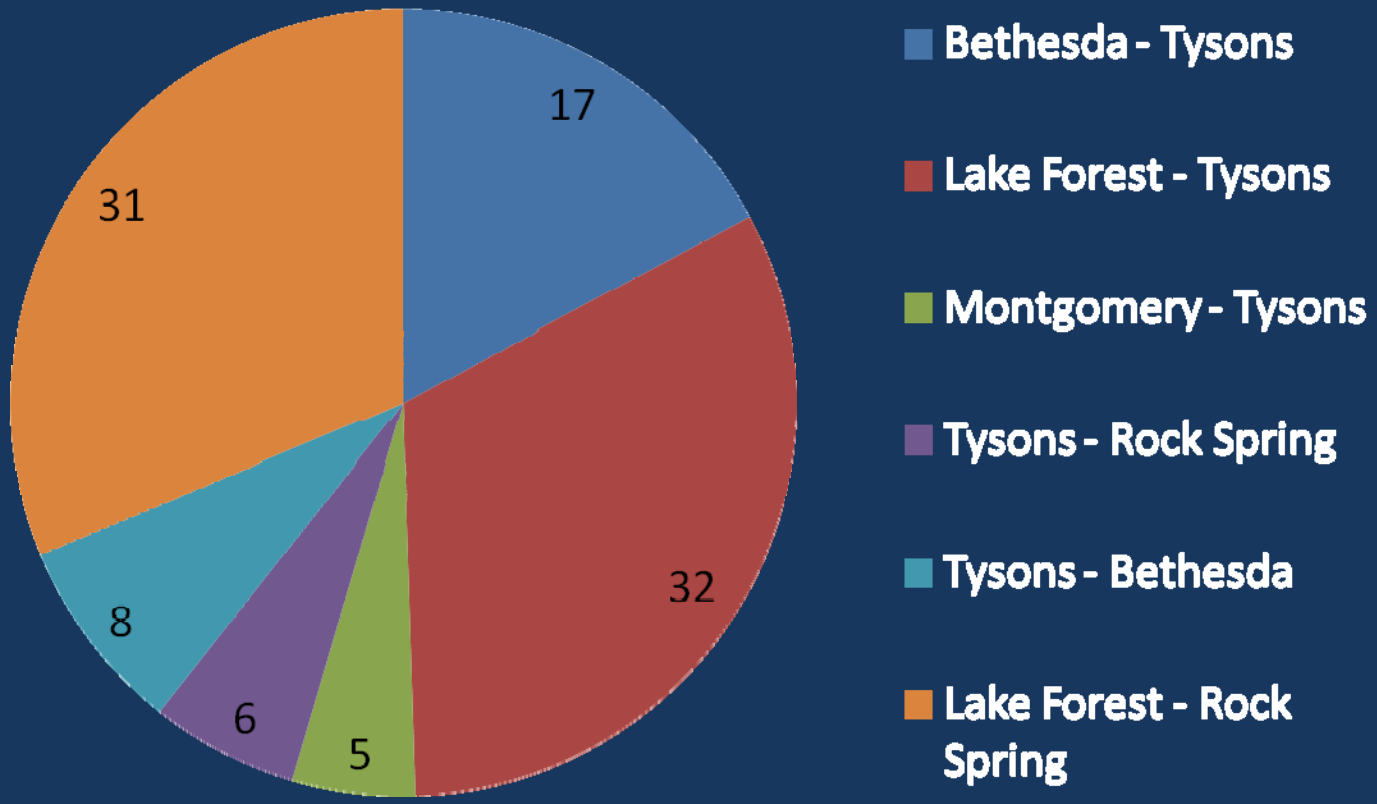
Metrobus provided “SmartMover” service on the American Legion bridge from September 1998 – December 2003.

Service at the start:

Route	Service	Service Hours	Trips
14A, 14B	Bethesda Station and Tysons-Westpark	6 - 10 AM and 3 - 7 PM	24 AM; 28 PM
14C, 14D	Lakeforest Mall, Rock Spring Park, Montgomery Mall and Tysons-Westpark	6 - 10 AM and 3 - 7 PM	23 AM; 26 PM
14M	Bethesda Station, Tysons-Westpark and Tysons Corner Center	10 AM – 3 PM and 7 PM – 10 PM	11 Midday; 6 PM
14T, 14W	Shuttle routes to Tysons-Westpark, Westwood Center, Tysons Corner Center, and Westgate	6 - 10 AM and 3 - 7 PM	30 AM; 34 PM

Ridership Patterns in 1998

Percent of Riders Between Destinations



Percentages based on a total of 495 riders
Much of the intra Maryland ridership has been absorbed by J line Metrobus service

Service Issues

- Beltway Shoulder Use
- ✓ Not permitted in Virginia
- ✓ Permitted between American Legion Bridge and River Road only with cumbersome bus operators call-ins
- ✓ End result – little time savings from shoulder use
- Unable to secure commuter parking on Virginia side
- ✓ Lopsided ridership from Maryland to Virginia workplaces
- Shuttle routes not successful
- ✓ Timing problems with transfers from express to shuttle routes
- ✓ Circuitous routings in Tysons area

Service Issues

- Why SmartMover service was discontinued
- ✓ Ridership decline (from high of 800 daily riders in Fall 2000 to less than 400 in 2003)
- ✓ Cost recovery was 5% (Metrobus average is 33.78%)
- ✓ Subsidy per passenger was $10.84 (Metrobus average is $1.99)
- MDOT requested elimination of poor performing service due to fiscal constraints

Service Considerations a Decade Later

- Opening of Silver Line Rail service to Tysons area December 2013.
- Extensive Tysons Circulator bus service will commence with Silver Line opening
- Business centers in Tysons and Bethesda have grown, bringing more congestion and more potential riders
- Virginia Beltway Express lanes to open in December 2012
- Gasoline prices and auto commuter's willingness to seek other modes have increased

Routing Considerations

Map of potential route (s)

Next Steps

- Metro Service Evaluation Study
  - Additional data and customer feedback
- Service proposals in Metro FY 14 Budget

Appendix: SmartMover Routing

14A,B Bethesda – Tysons via River Road (14A), Old Georgetown Road (14B) to the Beltway. Crossed American Legion Bridge and used the Dulles Toll Road to Tysons-Westpark terminal

14C,D Lakeforest – Tysons via I-270 and Rock Spring Park/ Montgomery Mall to I 495. Crossed American Legion Bridge and used the Dulles Toll Road to Tysons-Westpark terminal

14M operated as 14A Bethesda to Tysons-Westpark, then continued as an off-peak circulator via Tysons-Galleria to Tysons Corner Center

14T shuttle operated via Westwood Center, Leesburg Pike, Gosnell/Old Courthouse Rds., Tysons Corner Center, International Drive

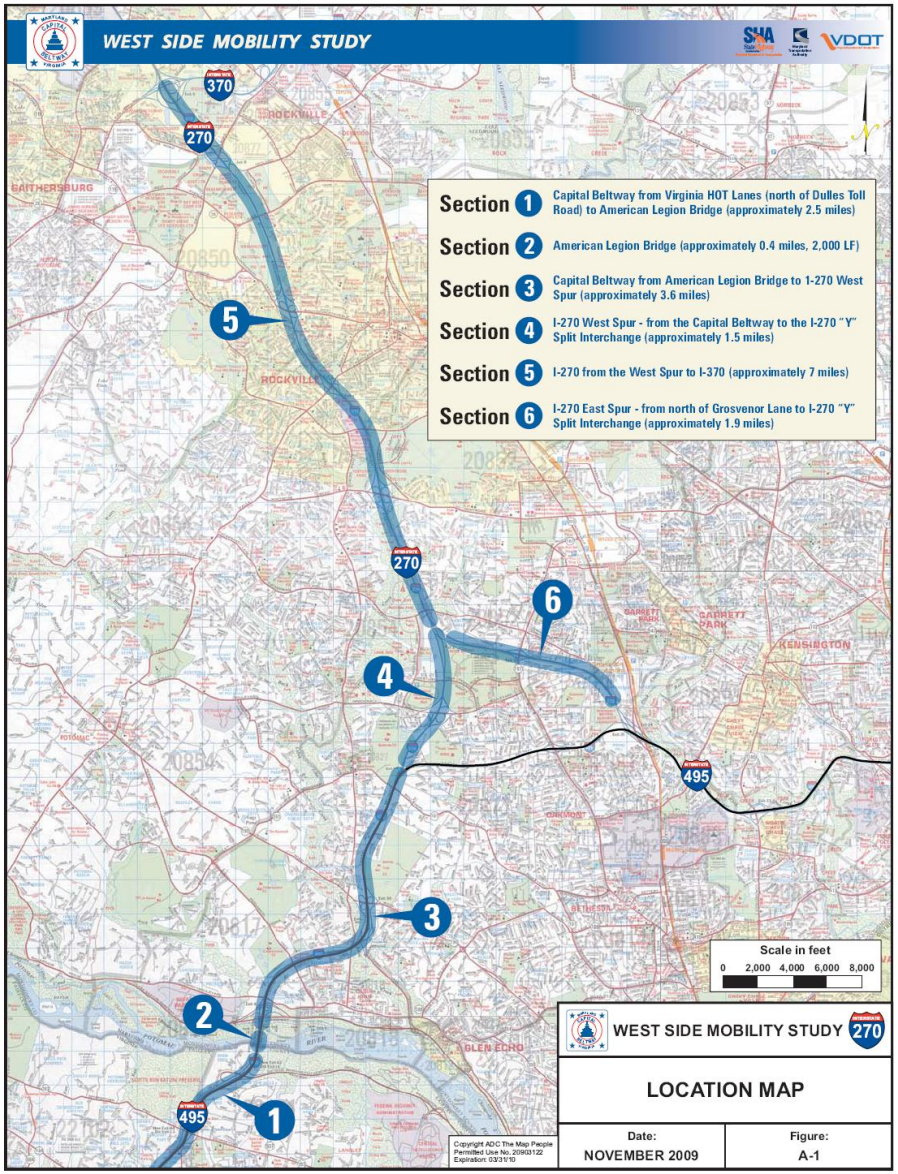
14W shuttle operated via Westgate (Dolley Madison Blvd. to Old Meadow Rd. and Colshire Dr. office parks)

2009 West Side Mobility Study - Overview

The West Side Mobility Study was led by the SHA and supported by VDOT.

The **14-mile** long project extends from north of Dulles Toll Road interchange along the Capital Beltway in Virginia to the I-370 interchange along I-270 in Maryland.

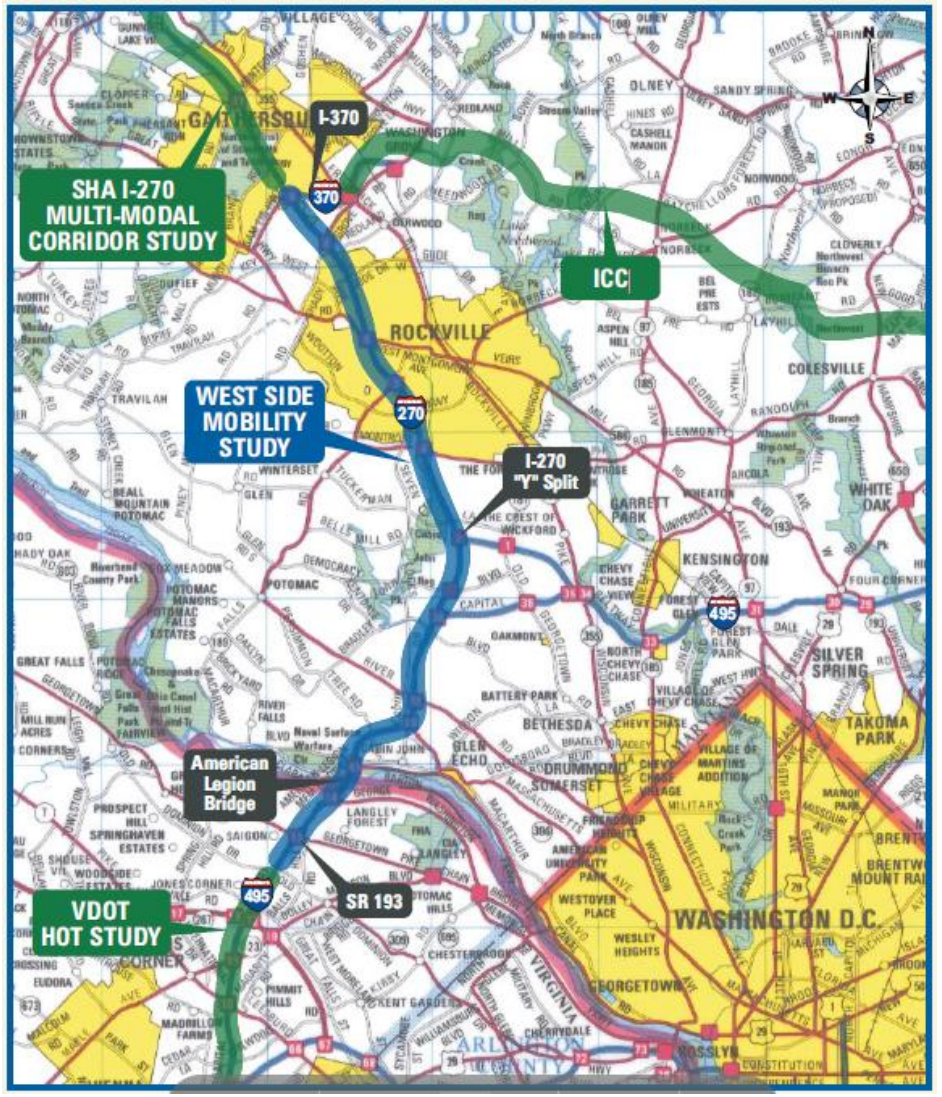
1. Virginia portion of the Capital Beltway (Dulles Toll Road to American Legion Bridge)
2. American Legion Bridge
3. Maryland portion of the Capital Beltway (American Legion Bridge to I-270 West Spur)
4. I-270 West Spur
5. I-270 Mainline (I-270 Spurs to I-370)
6. I-270 East Spur



2009 West Side Mobility Study - Purpose

Evaluate a managed lane system connecting Virginia's HOT Study, MD Capital Beltway Study, I-270 Multi-Modal Study, and ICC.

Study Completed:
November 2009



2009 West Side Mobility Study
Proposed Long-Term Alternatives

- 7 alternatives developed
- Variety of operational concepts:
  - One versus two lane managed system
  - Widen for capacity versus convert HOV to ML
  - Maintain barrier between GP and CD versus shift barrier between GP and ML
- Cost range: $1.04 to $2.65 billion (in ’08 dollars)

GP: General Purpose

ML: Managed Lane (ETL/ HOT)

CD: Collector Distributor Lane

2009 West Side Mobility Study
Proposed Mid-Term Improvements

- Provide additional capacity without large scale widening, impacts, or cost
- Potential improvements:
  1. Restriping within existing pavement area (*Next slide*)
  2. Peak Period Left Shoulder Use
  3. Peak Period Right Shoulder Use
  4. Reversible Lanes (north of MD 118 on I-270 to north of Capital Beltway)
  5. Convert I-270 HOV lanes to managed lanes

2009 West Side Mobility Study
Proposed Mid-Term Improvement -Restriping Option

- Provides permanent additional capacity
- Restripe to provide 1 additional lane per direction
  - ⇒1 managed lane along the Beltway
  - ⇒2 managed lanes along I-270 and Spurs
- Provide 2’ buffer between GP and managed lanes
- Reduce all lanes to 11'
- Reduce left shoulder

2009 West Side Mobility Study
Proposed Short-Term Improvements

- Provide improvements at localized congestion points

- **Improvement 1**: Extend Acceleration Lanes for I-270 Southbound Slip Ramps at Multiple Locations
- **Improvement 2**: Extend Acceleration Lane for MD 28 On-Ramp onto I-270 Southbound CD
- **Improvement 3**: Extend Deceleration Lane for MD 190 Exit along I-495 Westbound
- **Improvement 4**: Extend HOV Lane between MD 190 and I-270 along I-495 Eastbound

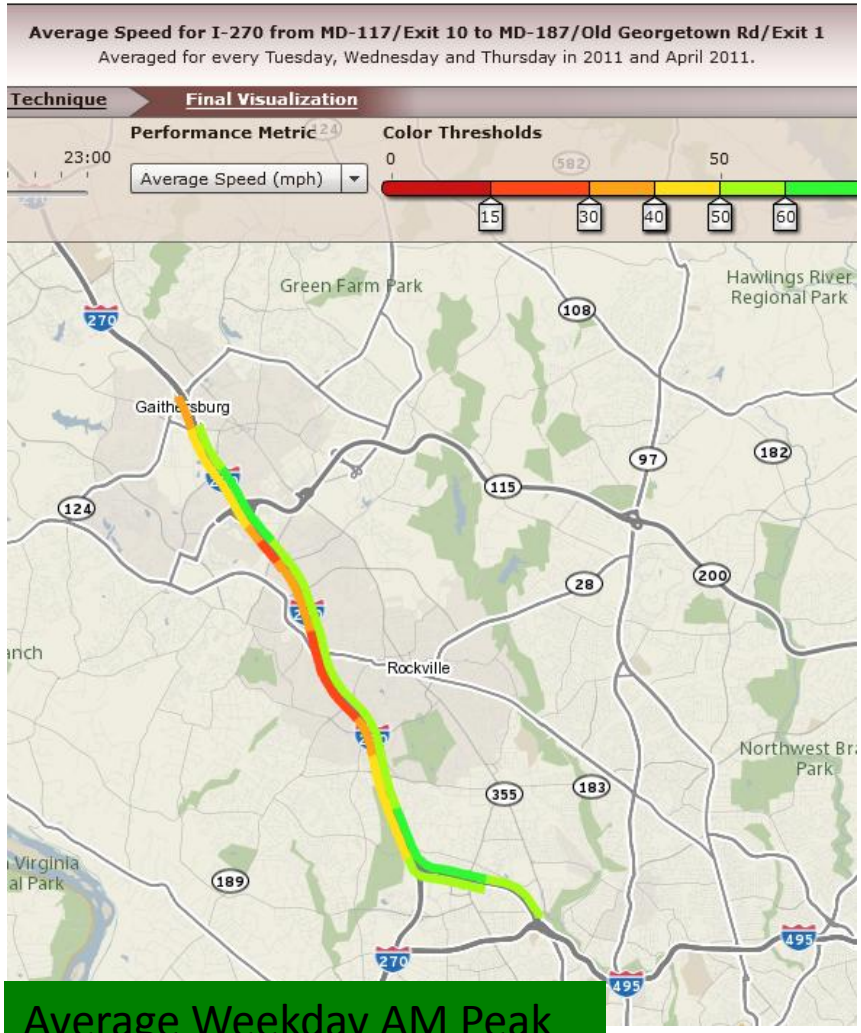
I-495 Average Congestion in 2011

Average Weekday AM Peak

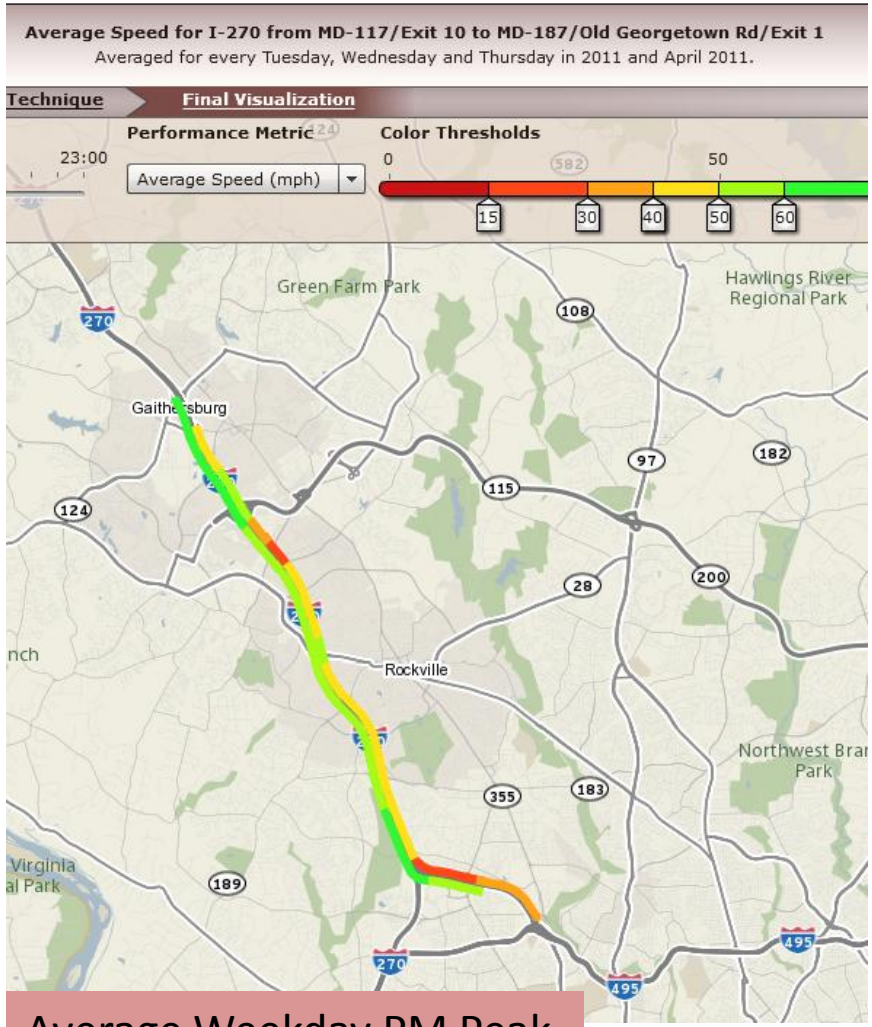
Average Weekday PM Peak

Based on (Tues-Thurs) INRIX Speed Data for 2011

I-270 Average Congestion in 2011



Average Weekday AM Peak



Average Weekday PM Peak

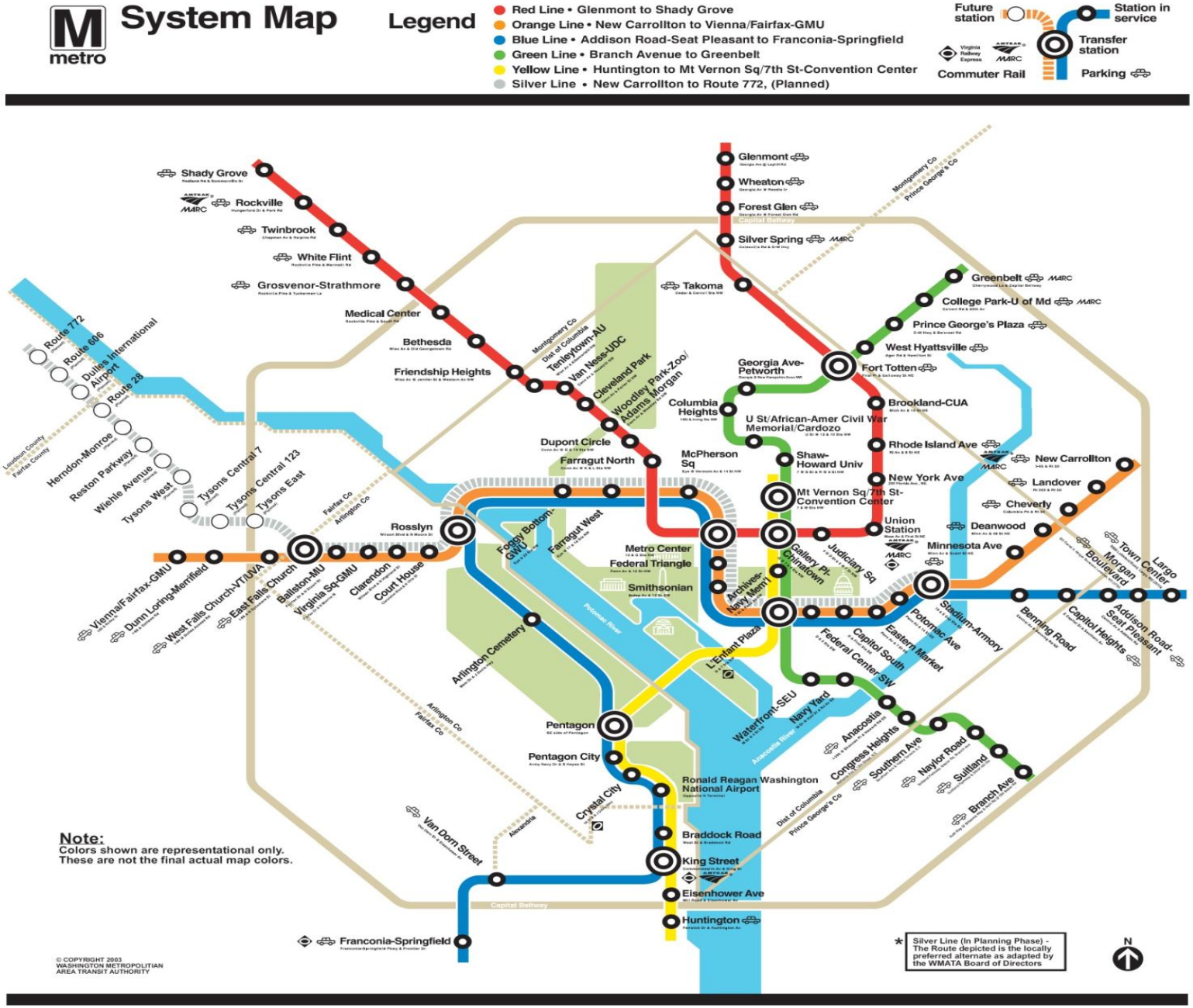
Based on (Tues-Thurs) INRIX Speed Data for April 2011

Next Steps

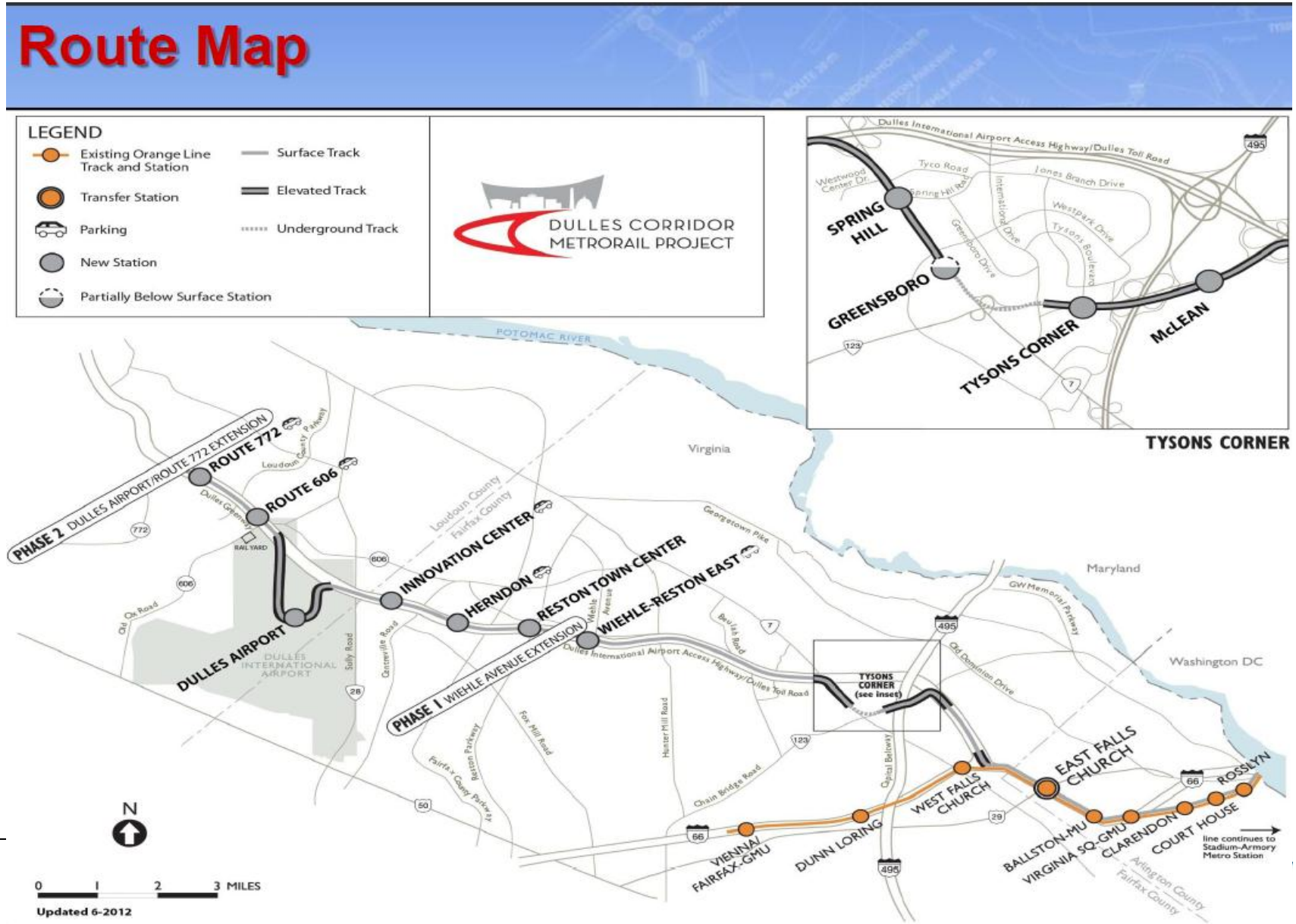
- Identify sources of congestion *(recurring and non-recurring)* bottlenecks
- Identify low cost congestion relief solutions by means of geometric improvements etc.
- Evaluate potential solutions using simulation models (VISSIM)
- Perform benefit/ cost analysis to prioritize project list
- Work towards programming and implementation

Dulles Corridor Metrorail Project

July 25, 2012


System Map
metro
Legend
Red Line • Glenmont to Shady Grove
Orange Line • New Carrollton to Vienna/Fairfax-GMU
Blue Line • Addison Road-Seat Pleasant to Franconia-Springfield
Green Line • Branch Avenue to Greenbelt
Yellow Line • Huntington to Mt Vernon Sq/7th St-Convention Center
Silver Line • New Carrollton to Route 772, (Planned)
Future station
Station in service
Transfer station
Parking
Commuter Rail
Shady Grove
Rockville
Twinbrook
White Flint
Grosvenor-Strathmore
Medical Center
Bethesda
Friendship Heights
Tenleytown-AU
Van Ness-UDC
Cleveland Park
Woodley Park-Zoo/ Adams Morgan
Dupont Circle
Farragut North
McPherson Sq
Metro Center
Federal Triangle
Smithsonian
Farragut West
Foggy Bottom-GWU
Rosslyn
Arlington Cemetery
Pentagon
Pentagon City
Crystal City
Ronald Reagan Washington National Airport
Braddock Road
King Street
Eisenhower Ave
Huntington
Franconia-Springfield
Glenmont
Wheaton
Forest Glen
Silver Spring
Takoma
Greenbelt
College Park-U of Md
Prince George's Plaza
West Hyattsville
Fort Totten
Georgia Ave-Petworth
Columbia Heights
U St/African-Amer Civil War Memorial/Cardozo
Brookland-CUA
Rhode Island Ave
Shaw-Howard Univ
New York Ave
Mt Vernon Sq/7th St-Convention Center
Union Station
Gallery Pl-Chinatown
Judiciary Sq
Archives-Navy Memorial
New Carrollton
Landover
Cheverly
Deanwood
Minnesota Ave
Stadium-Armory
Potomac Ave
Eastern Market
Capitol South
Federal Center SW
L'Enfant Plaza
Waterfront-SEU
Navy Yard
Anacostia
Congress Heights
Southern Ave
Naylor Road
Suitland
Branch Ave
Benning Road
Capitol Heights
Addison Road-Seat Pleasant
Largo Town Center
Morgan Boulevard
Vienna/Fairfax-GMU
Dunn Loring-Merrifield
West Falls Church-VT/UVA
East Falls Church
Ballston-MU
Virginia Sq-GMU
Clarendon
Court House
Route 772
Route 606
Dulles International Airport
Route 28
Herndon-Monroe
Reston Parkway
Wiehle Avenue
Tysons West
Tysons Central 7
Tysons Central 123
Tysons East
Loudoun County
Fairfax County
Fairfax Co
Arlington Co
Montgomery Co
Prince George's Co
Dist of Columbia
Alexandria
Van Dorn Street
Capital Beltway
Potomac River
Anacostia River
Note:
Colors shown are representational only.
These are not the final actual map colors.
* Silver Line (In Planning Phase) - The Route depicted is the locally preferred alternate as adapted by the WMATA Board of Directors
N
© COPYRIGHT 2003
WASHINGTON METROPOLITAN
AREA TRANSIT AUTHORITY
No Smoking
No Eating or Drinking
No Animals (except service animals)
No Radios (without earphones)
No Litter or Spitting
No Dangerous or Flammable Items

Route Map


LEGEND
Existing Orange Line Track and Station
Transfer Station
Parking
New Station
Partially Below Surface Station
Surface Track
Elevated Track
Underground Track
DULLES CORRIDOR METRORAIL PROJECT
SPRING HILL
GREENSBORO
TYSONS CORNER
McLEAN
TYSONS CORNER
PHASE 2 DULLES AIRPORT/ROUTE 772 EXTENSION
ROUTE 772
ROUTE 606
RAIL YARD
DULLES AIRPORT
INNOVATION CENTER
HERNDON
RESTON TOWN CENTER
WIEHLE-RESTON EAST
PHASE 1 WIEHLE AVENUE EXTENSION
TYSONS CORNER (see inset)
VIENNA/ FAIRFAX-GMU
DUNN LORING
WEST FALLS CHURCH
EAST FALLS CHURCH
ROSSLYN
BALLSTON-MU
VIRGINIA SQ-GMU
CLARENDON
COURT HOUSE
line continues to Stadium-Armory Metro Station
POTOMAC RIVER
Virginia
Maryland
Washington DC
Dulles International Airport Access Highway/Dulles Toll Road
N
0 1 2 3 MILES
Updated 6-2012

Project Overview – Silver Line

- Dulles Metrorail is a 23-mile extension of the existing Orange Line
  - Total Project Cost = $5.6B to $6B
    - Fairfax County Funding = over $900B
  - Provides a 1 seat ride from Washington Dulles International Airport to Washington DC
  - 11 Stations, 6 Parking Garages
    - 8 Stations in Fairfax County – 4 in Tysons Corner and 4 Dulles Corridor
    - 3 Parking Garages in Fairfax County
  - Constructed in 2 Phases
    - Phase 1 – East Falls Church to Wiehle Avenue/Reston, (5 Stations, 1 Parking Garage)
    - Phase 2 – Wiehle Avenue/Reston to Dulles Airport and stations 2 stations in Loudoun County, (6 Stations, 5 Parking Garages)
  - Enhances regional mobility and accessibility to and within Tysons Corner and the Dulles corridor
  - Access to Montgomery County via METRO Center Red Line
  - Funding Partners – Federal, Virginia, Fairfax County, Loudoun County, MWAA, Dulles Toll Road users
  - Metropolitan Washington Airports Authority is managing the construction

Project Status

- Phase 1
  - Construction 76% Complete
  - Design/Build 99% Complete
  - Construction Completion – August 2013
  - Service Begins – End of 2013

- Phase 2
  - Preliminary Engineering – March 2012
  - Environmental Process – Summer 2012
  - Procurement
    - Request for Qualification Information (RFQI) issued – July 2012
    - Next Step Request for Proposals (RFP)
    - Award as soon as late Spring 2013
  - Construction Completion 5 years after award

Provisions for Enhanced Connectivity to Silver Line Stations

- A frequent internal bus circulator system will be operational at the opening of Phase I of the Silver Line and will provide a connection between the Metrorail stations in Tysons and activities beyond reasonable walking distance.
- The planned grid of streets to be built as Tysons redevelops will be constructed as complete streets allowing for convenient pedestrian and bicycle connectivity to Metrorail stations.
- In the shorter term many of the recommendations from Fairfax County's TMSAMS (for Tysons) and RMAG (for Reston) studies which identified projects to enhance pedestrian and bicycle connectivity to and from Metrorail stations will be implemented.
- Longer distance bus routes using the new I-495 Express Lane connections to and from Tysons will connect with Metrorail stations and the circulator.


Route 7 and Route 123 Tunnels


Tysons Corner Station


SAIC
Greensboro Station


Wiehle-Reston East Station